

# Achieving “Information Fulfilment” in the Networked Society.

## Part 1: Introducing New Concepts

**M.E. Burke**

*Information Systems Institute, University of Salford, UK*

### **Category**

Literature review paper

### **Abstract**

#### **Purpose**

The aim of the paper is introduce the idea of information fulfilment. The networked society provides many opportunities for information flow. However, as information professionals we readily accept that although we are surrounded by information of many sorts, in many formats, what is important is whether users consider they ever achieve what is known as “Information Fulfilment”. i.e. occurrences when there has been information which is accurate, timely, current and presented in an appropriate and useful format to allow (work) tasks to be completed.

#### **Design/Methodology/Approach**

This first paper contains a literature review which informed the study. The study (which will be reported in detail in a later paper) was interpretive and used ethnography (through participant observation) as the research tool. The research deals with issues surrounding organisation structures and examines levels of information fulfilment in micro substantive settings.

#### **Findings**

The paper serves to introduce background and cultural information from a small section of a larger European research project which involved five countries and was partially funded by TEMPUS and Leonardo da Vinci Socrates grants.

#### **Research Limitations/Implications**

The paper introduces ideas concerning information fulfilment and addresses initial issues concerning a small section of results from a larger project. Phase 2 is now underway and more studies are planned. It is noted that organisation structures are only one variable that affect levels of information fulfilment and there are plans in the future to further extend the study.

#### **Originality/Value**

The research attempts to link the levels of information fulfilment with types of organisation structures. This paper introduces the concept and gives the rationale for the project.

### **Keywords**

Information Fulfilment; Literature Review; Europe; TEMPUS; Socrates

## **Introduction**

The networked society provides many opportunities for information flow. However, as information professionals we readily accept that although we are surrounded by information of many sorts, in many formats, what is important is whether users consider they ever achieve what is known as “Information Fulfilment”. i.e. occurrences when there has been information which is accurate, timely, current and presented in an appropriate and useful format to allow (work) tasks to be completed allowing the user to experience fulfilment. The aim of the paper is to introduce the concept of information fulfilment and to present background information on a large European project. This is achieved by a discussion of definitions of the term and an overview of the relevant literature. A second paper will be published separately at a later date and will examine aspects of the study in more detail.

The work had its origins as a large research project involving five countries (partially funded by two European bodies TEMPUS and Leonardo da Vinci Type 5 funding). The research dealt with issues surrounding organisation structures and examined levels of information fulfilment in micro substantive settings, within institutions in each of the countries. Interpretive ethnographic studies were undertaken by examining the organisation’s shape and comparing that shape, e.g. bureaucratic, matrix, etc., with the rate of achievement of information fulfilment.

## **Defining the term**

Information Fulfilment can be defined as the achievement of all information needs. The provenance of the term can be traced back to the 1870s when it was used to describe the fulfilment of a commercial order.

The aim of an information system is to ensure that the end user is able to function effectively within the organisation – and able to access all the necessary information in order to complete a task. There have been a variety of information models proposed which aim to plot the sequences of events from the initial information seeking to information finding. In general information seeking has been examined by a variety of authors and the pivotal ideas can be traced through publications such as the American Psychological Association Reports on Information Exchange, (1963; 1969,) the British studies undertaken at Bath University (1979; 1980) the papers by Earle and Vickery (1969) and later papers published in the 1970's such as those by Line (1971).

## **The literature**

During the late seventies and early eighties, the emphasis within information changed to an examination of the systems of behaviour which people use to seek information. A particularly important work in this area was carried out by Ellis (1989; 1993) which is summarized as follows.

Ellis examined information-seeking behaviour of social scientists using primary material collected using semi-structured interviews. His results identified six types of information seeking behaviour, which he categorized as:

- Starting - those activates used for the initial information search;
- Chaining - literally following the chains or threads of a citation and following clues found in the starting process;
- Browsing - Casual browsing for information, scanning;
- Differentiating –Identifying the differences between references;
- Monitoring - Awareness of any changes in the literature and new ideas;
- Extracting - Reading sources and picking up on relevant information.

Two final categories of Verifying (checking for accuracy) and Ending (Final search strategies) were added to take account of the ending process. These are useful categories but make no mention of the final phases that concern the fulfilment of all information needs.

Other authors have concentrated on particular aspects such as “Uncertainty” (Ingwersen, 1996; Kuhlthau, 1993) “Serendipity” (Rice, 1988; Foster & Ford, 2003) and “Browsing” (Levine 1969). In the later 1990s models such as that proposed by Kuhlthau (1991) considered the emotional aspects of information seeking and proposed six stages ranging from initiation; selection; exploration; formulation; collection; and presentation. Kuhlthau also presented a final stage of “relief, satisfaction and a sense of direction”, but again no mention of fulfilment of information needs. Palmer’s (1991) study is of particular interest as he examined the influence of personality, discipline and *organisational structure* on a range of employees working in agricultural research. His conclusions that information seekers can be classified into five sets – that of non seekers; lone wide rangers; unsettled self conscious seekers; confident collectors and hunters - are interesting but form artificial rigid boundaries around the seeking process. In order to alleviate this Palmer looked at which factors determined the seeking behaviour and found them to be discipline; work role; time spent in the subject field and organisation. By applying this set of criteria, the model has another dimension.

Jarvelin and Wilson (2003) provide a synthesis of the literature which analysed information seeking in a place of employment (Auster and Choo, 1994; Fabritius, 1998; Herner and Herner, 1967; Siatri, 1998; Timko and Loynes, 1989; Wilson and Streatfield, 1980). These studies included a wide range of contexts from prairie farmers, to news reading and a comparative study of electronic seeking in Greek and British Universities. Other studies of information seeking within workplaces have included Bawden and Kay (1997) on midwifery; Cobbledick (1996) on artists; Futas & Vidor (1986) on business managers using libraries, Gorman (1995) and Lundeen, Tenopir & Wermager (1993) on doctors and others in the medical profession and Nicholas and Martin (1997) on the information seeking behaviour of journalists.

Another major influential paper is that written by Wilson (1997) which reviewed the literature in information seeking behaviour in fields outside information science, namely psychology, consumer research, health communication research and innovation research. From this study a new model of information behaviour was proposed. This study showed that an earlier model which he had proposed in 1981 needed to be expanded to what he termed the “person in context” stage i.e. the

decision to actually seek information. The expanded model of 1997 thus examined in more general terms information behaviour rather than information seeking.

The model included an emphasis on information need in that the “experience of need can only be discovered by deduction from behaviour or through the reports of the person in need”. The model allows for analysis of the context of the need, e.g. the environment, the social role and the cognitive state of the person searching for information; the barriers the seeker may encounter and the actual behaviour of the seeker, adapted from Ellis’s model of starting, chaining, extracting, etc.

However even within the 1997 Wilson model no mention is made of information fulfilment - the final stage of this model is information processing and use. The closest suggestion is that contained in Wilson’s (1999) review of information behaviour models where a “satisfaction/non satisfaction ” end stage or a solution statement is suggested which would resolve the “uncertainty” that was originally present at the start of the searching process.

It is also worth mentioning the relevant theories in communication disciplines, such as what is termed “gratification theory” (Fiske, 1990), i.e. the way in which a mass of people, (usually an audience) has “complex needs” that it needs to gratify through various media. Diversion; escapism; emotional release; personal relationships: companionship and social utility are classified by McQual (1972) as categories of gratification whilst the social utility category encompasses the “work” category. Wilson (1999) comments that the categories “may have a cognitive component recognized in the concept of the *need for cognition*: the need to find order and meaning in the environment, which is also expressed as the need to know, curiosity, the desire to be informed.”

The situational contexts of information seekers have been studied but in terms of learning styles in mediated online learning. (Spink, Wilson, Ford, Foster & Ellis, 2002) This study examined human information seeking processes and looked at aspects such as uncertainty and the analysis of cognitive styles of learning. Pask’s work on learning styles was also reviewed for relevance to modern information seeking (Ford, 2001) in that the appropriate kind of technology is now widely available in educational institutions, making it easier to conduct the type of research proposed by Pask’s models.

However, these theories still do not cover the notion of information fulfilment.

The model thus proposed in this research looks at information from a diagrammatically opposing view – the view of information and total satisfaction, i.e. fulfilment that all information needed to complete a particular task should be current, accurate, and in an appropriate format.

Finally, there is some limited literature on task categorisation in information seeking. Tasks can be seen to progress in difficulty and complexity from a simple processing task through everyday decision tasks and more difficult unstructured, unexpected decisions (Belkin, 1980; Jarvelin & Wilson, 2003).

There is then great diversity in both the approaches and content of Information Seeking research - yet the fulfilment of information needs is critical as information fulfilment can be seen as the next logical action which takes place after Ellis's

"Extracting" stage of information seeking and Wilson's "Information processing and use" stage of information seeking.

This research project has attempted to link the final part of the information seeking process - i.e. the level of fulfilment, rather than satisfaction, experienced by members of the organisation who actually use the information at the end of the process

The aim of the research project was to bring together this particular aspect of information management and establish what kinds of relationships can be found among different kinds of organisation structures, taking into account the cultural differences in each of the case studies. The different levels of information fulfilment experienced by the members of each of the organisations are investigated, compared with the typology of the structure of the organisation, and a matrix proposed which could be employed as a tool to assist with decisions re organisational planning. The research project was called the Information Fulfilment project (IFP) and was partially funded by two European bodies, specifically from TEMPUS funding and by Type 5 Leonardo da Vinci Socrates Funding. Phase 1 was completed in 2004 and Phase 2 began in 2005. As stated in the introduction, the actual results of the research project will be reported in a follow up paper.

## **Conclusion**

The aim of this paper was introduce the concept of information fulfillment and to initially explain the background to a large European funded project known as the IF project. A review of the literature has been presented which has discussed the origins of information fulfillment and the provenance of relevant disciplines. A more detailed future paper will present the results of the study and discuss the implications of the findings for all who work within the information society.

The design of an organisation structure is influenced by many variables; however, achieving high levels of information fulfillment is an important issue and one which is becoming vital in terms of the amount of information which needs to be dealt with on a daily basis. The networked society has increased the amounts of information available and it is up to all who are involved in both the information processing and organisational design in countries throughout the world - to ensure that the end users of the information are indeed able to achieve true information fulfillment in their working lives.

## References

American Psychological Association (1963-1969), *Reports of the project on specific information exchange in psychology*, 3 Vol. Washington D.C. American Psychological Association

Auster E. and Choo C. (1994), "How senior managers acquire and use information in environmental scanning". *Information Processing and Management* Vol. 30 No.5, pp. 607-618

Bath University (1979), *The structure of social science literature as shown by citations. Bath, Bath University* [Design of information systems in the social sciences, Research Reports Series A, No.3]

Bath University (1980), *Towards the improvement of social science information systems: Overview of research carried out 1971-1975*. Bath, Bath University [Design of information systems in the social sciences, Research Reports, Series A, No. 1]

Bawden, D and Kay, R. (1997), "Information Behaviour in Nursing Specialties: A Case Study of Midwifery". *Journal of Information Science* Vol. 23 No. 6, pp. 407-421.

Belkin, N.J. (1980), "Anomalous state of knowledge for information retrieval". *Canadian Journal of Information Science* Vol. 5, pp.133-142

Cobbledick, S (1996), "The Information-Seeking Behaviour of Artists: Exploratory Interviews", *Library Quarterly*, Vol.66 No. 4, pp. 343-372.

Earle, P & Vickery, B.C. (1969), "Social science literature use in the UK as indicated by citations". *Journal of Documentation*, Vol. 25 No.2, pp.123-141

Ellis, D (1989), "A behavioural approach to information retrieval design. *Journal of Documentation*", Vol. 46 No.3, pp 318-338

Ellis, D (1993), "Modelling the information seeking patterns of academic researchers: a grounded theory approach", *The Library Quarterly*, Vol. 63 No.4. pp. 469-486.

Fabritius, H. (1998), "Information seeking in the newsroom: application of the cognitive framework for analysis of the of the work context", *Information Research*, Vol. 4 No.2, Retrieved 10 Dec 2005 from <http://informationr.net/ir/>

Fiske, J. (1990), *Introduction to communication studies*, Routledge, London

Ford, N (2001), "The increasing relevance of Pask's work to modern information seeking and use", *Kybernetes*, Vol. 30 No. 5/6 pp.603-629

Foster, A. and Ford, N. (2003), "Serendipity and information seeking: an empirical study", *Journal of Documentation*, Vol. 59 No. 3, pp. 321-340

Futas, E. and Vidor, D. (1986), "How Business Professionals Use Libraries," *Library Journal*, Vol.1 No.11, pp.112-121

Gorman, P. (1995), "Information Needs of Physicians", *Journal of the American Society for Information Science*, Vol. 46 No.10, pp. 729-736.

Herner, S. and Herner, M. (1967), "Information needs and uses in science and technology", *Annual Review of Science and Technology*, Vol. 2, pp.1-34

Ingwersen, P. (1996), "Cognitive perspectives of information retrieval interaction: elements of a cognitive IR theory," *Journal of Documentation*, Vol. 51 No. 1. pp. 2-50

Jarvelin, K and Wilson, T. D. (2003), "On conceptual models for information seeking and retrieval research", *Information Research*. Vol. 9 No.1, Retrieved on 10 Dec 2005 from <http://informationr.net>

Kuhlthau C. (1993), "A principle of uncertainty for information seeking," *Journal of Documentation*, Vol. 49 No.4, pp. 39-55

Kuhlthau, C. (1991), "Inside the search process: information seeking from the user's perspective," *Journal of the American Society for Information Science*, Vol.42 No.3 pp.361-371

Levine M.M. (1969), "An essay on browsing", *Research Quarterly*, Vol. 9 No1, pp. 35-37

Line, M.B. (1971), "The information uses and needs of social scientists: an overview of INFROSS," *Aslib Proceedings*, Vol. 23 No.8, pp. 412-434

Lundeen, G., Tenopir, C. and Wermager. A. (1993), "Information Needs of Rural Health Care Workers", in *American Society for Information Science, Proceedings of the 56th Annual Meeting*, Washington, D.C., ASIS, pp. 253-268.

McQual, D. (1972), *Sociology of mass communications*, Macmillan, London.

Mintzberg, H. (1989), *Mintzberg on management*, Free Press, New York

Nicholas, D. and Martin, H. (1997), "Assessing Information Needs: A Case Study of Journalists," *Aslib Proceedings*, Vol. 49 No.2, pp. 43-52.

Palmer, J. (1991), "Scientists and information: 1. Using cluster analysis to identify information style", *Journal of Documentation*, Vol. 47 No. 2, pp.105- 129

Rice, J. (1988), "Serendipity and holism: the beauty of OPACS," *Library Journal*, Vol. 113 No 3, pp. 138-41.

Siatri, R. (1998), "Information seeking in an electronic environment: a comparative investigation among computer scientists in British and Greek Universities,"

*Information Research*, Vol.4 No.2, Retrieved 14 November 2005 from <http://information.net/ir>

Spink, A., Wilson, T., Ford, N., Foster, A., and Ellis, D. (2002), "Information seeking and mediated searching", Parts 1-1V. *Journal of the American Society for Information Science*, Vol. 53 No. 9, pp. 695-735

Timko, M and Loynes, R.M.A. (1989), "Market information needs for prairie farmers", *Canadian Journal of Agricultural Economics*, Vol. 37, pp.609-627.

Wilson, T.D. (1997), "Information behaviour: an interdisciplinary perspective", *Information Processing and Management*, Vol. 33 No. 4, pp. 551-572

Wilson T.D. (1999), "Models in information behaviour research", *Journal of Documentation*, Vol.55 No. 3, pp. 249-270

Wilson, T.D. & Streatfield D.R. (1980), *A study of information use in local authority social services departments*. Conducted by Project INNIS Sheffield, University of Sheffield, School of LIS, occasional paper no 12. Retrieved 12 October 2004 from <http://informationr.net/tdw>

### **The Author**

Dr. M.E. Burke is a Lecturer, Information Systems Institute, University of Salford, Maxwell Building, Salford, Greater Manchester, M5 4WT, UK

Tel: 0161 295 5657

Fax: 0161 745 8169

E-Mail: [m.e.burke@salford.ac.uk](mailto:m.e.burke@salford.ac.uk)